

IN THE CLAIMS:

- 1 1. (Currently amended) A data collection apparatus, comprising:
- 2 a sensing unit for sensing a parameter comprising a sensor, a first data
- 3 storage device, a first receiving device, and a first transmitting device, said
- 4 first data storage device for storing data from said sensor, said first
- 5 transmitting device for transmitting data derived from said sensor;
- 6 a control unit ~~separable~~ separate from said sensing unit, said control unit
- 7 comprising a second receiving device, a second transmitting device, and a
- 8 second data storage device different from said first data storage device,
- 9 said second receiving device to receive data transmitted from said sensing
- 10 unit, said second data storage device for storing said data received from
- 11 said sensing unit wherein said sensing unit is configured so a real time
- 12 signal triggers a change in at least one from the group consisting of: (a)
- 13 sensor data handling, (b) sensor data collection, (c) sensor data storage in
- 14 said sensing unit, and (d) sensor data transmission from said sensing unit,
- 15 wherein all power for powering said sensing unit is derived from said
- 16 control unit.
- 1 2. (Currently amended) The apparatus as recited in claim 1, wherein said sensor
- 2 comprises at least one from the group consisting of an accelerometer, a
- 3 displacement sensor, a strain gauge, a pressure gauge, a thermometer, a flow
- 4 monitor, a heart monitor, an electrocardiogram (EKG), an electromyogram
- 5 (EMG), an electroencephalogram (EEG), a blood monitor, a force gauge, a
- 6 humidity monitor, a growth rate monitor, a ripeness monitor, a light intensity
- 7 gauge, a radiation detector, a chemical detector, a corrosion detector, and a toxic
- 8 monitor.

- 1 3. (Currently amended) The apparatus as recited in claim 2, wherein said sensor
2 comprises an array of ~~said~~ accelerometers.
- 1 4. (previously presented) The apparatus as recited in claim 2, wherein said sensor
2 comprises a linear accelerometer.
- 1 5. (previously presented) The apparatus as recited in claim 2, wherein said sensor
2 comprises a resistive accelerometer.
- 1 6. (Currently amended) The apparatus as recited in claim 1, wherein said sensor is
2 ~~for detecting~~ detects vibration.
- 1 7. (Currently amended) The apparatus as recited in claim 1, wherein said sensing
2 unit is ~~for attaching~~ attached to at least one from the group consisting of an
3 architectural structure and a vehicle.
- 1 8. (Currently amended) The apparatus as recited in claim 1, wherein said sensing
2 unit is ~~for wearing~~ worn by a live subject.
- 1 9. Cancel
- 1 10. (Currently amended) The apparatus as recited in claim [[9]] 1, further comprising
2 a hermetically sealed housing, wherein said sensing unit is located in said
3 hermetically sealed housing.
- 1 11. (previously presented) The apparatus as recited in claim 10 wherein said housing
2 comprises at least one from the group consisting of titanium and ceramic.

- 1 12. (previously presented) The apparatus as recited in claim 10, wherein said sensing
2 unit further comprises an antenna, wherein said antenna extends outside said
3 housing and is connected within said housing through a penetration in said
4 housing.
- 1 13. (previously presented) The apparatus as recited in claim 1, wherein said sensing
2 unit further comprises a microprocessor.
- 1 14. (previously presented) The apparatus as recited in claim 13, wherein said
2 microprocessor is connected to said first storage device, said first transmitting
3 device, and said first receiving device.
- 1 15. (previously presented) The apparatus as recited in claim 13, wherein said
2 microprocessor comprises a triggering device for triggering said change.
- 1 16. (previously presented) The apparatus as recited in claim 1, wherein said sensing
2 unit further comprises a power supply.
- 1 17. (Currently amended) The apparatus as recited in claim 16, wherein said power
2 supply comprises ~~at least one from the group consisting of~~ a rechargeable battery
3 ~~and a fuel cell~~.
- 1 18. (Original) The apparatus as recited in claim 17, further comprising a circuit for
2 recharging said battery by inductive coupling.
- 1 19. (Currently amended) The apparatus as recited in claim 18, further comprising a
2 hermetically sealed housing, wherein said sensor and said circuit for recharging
3 [[is]] are in said housing and said coupling is through said housing.

- 1 20. (previously presented) The apparatus as recited in claim 18, wherein said circuit
2 for recharging is in said housing and an antenna for said coupling is located
3 outside said housing.
- 1 21. (previously presented) The apparatus as recited in claim 1, wherein said first
2 receiving device comprises an RF receiver for receiving said real time signal.
- 1 22. (previously presented) The apparatus as recited in claim 1, wherein said first
2 transmitting device includes an RF transmitter.
- 1 23. (Previously presented) The apparatus as recited in claim 1, wherein said sensing
2 unit includes a clock, wherein said control unit includes a time reference, and
3 wherein said second transmitting device is configured to send a timing signal to
4 said sensing unit for synchronizing said clock to said time reference.
- 1 24. (Currently amended) The apparatus as recited in claim 23, wherein a plurality of
2 sensing units ~~includes~~ include clocks, wherein said timing signal synchronizes
3 said clocks on a plurality of said sensing units.
- 1 25. (Original) The apparatus as recited in claim 23, wherein said first storage device is
2 connected to receive and record said timing signal.
- 1 26. (Original) The apparatus as recited in claim 1, wherein said first data storage
2 device continually records.
- 1 27. Cancel

- 1 28. (previously presented) The apparatus as recited in claim 77, wherein when said
2 data received by said sensor reaches a threshold, data in said first storage device is
3 retained.
- 1 29. (Currently amended) The apparatus as recited in claim 28, wherein said retained
2 data includes data received after said data received by said sensor reaches said
3 threshold.
- 1 30. (previously presented) The apparatus as recited in claim 1, wherein said sensing
2 unit further includes a feedback device for adjusting said parameter based on said
3 data.
- 1 31. (Cancel)
- 1 32. (Previously presented) The apparatus as recited in claim 30, further comprising a
2 sensor for detecting excessive vibration, wherein said feedback device is an active
3 damping element to reduce vibration in response to excessive vibration.
- 1 33. (Cancel)
- 1 34. (Original) The apparatus as recited in claim 1, wherein said second data storage
2 device comprises a computer.
- 1 35. (Original) The apparatus as recited in claim 1, wherein said control unit further
2 comprises a device to signal a user that data exceeding a preset threshold has been
3 reached.
- 1 36. (Cancel)

1 37. (Cancel)

1 38. (previously presented) The apparatus as recited in claim 1, further comprising a
2 plurality of sensing units, wherein said second transmitting device is connected to
3 transmit address information to said sensing units to activate at least one from the
4 group consisting of all of said sensing units, specific ones of said sensing units,
5 and an individual sensing unit of said plurality of sensing units.

- 1 39. (Currently amended) A method of collecting data, comprising :
- 2
- 3 a) providing a sensing unit for sensing a parameter said sensing unit
- 4 comprising a sensor, a first data storage device, a first receiving
- 5 device, and a first transmitting device, said first data storage device
- 6 for storing data from said sensor, said first transmitting device for
- 7 transmitting data derived from said sensor;
- 8 b) providing a control unit ~~separable~~ separate from said sensing unit,
- 9 said control unit comprising a second receiving device, a second
- 10 transmitting device, and a second data storage device different
- 11 from said first storage device, said second receiving device for
- 12 receiving data transmitted from said sensing unit, said second data
- 13 storage device for storing said data received from said sensing unit,
- 14 wherein all power for powering said sensing unit is derived from
- 15 said control unit;
- 16 c) transmitting a real time signal from said control unit to said first
- 17 receiving device to trigger a change in at least one from the group
- 18 consisting of sensor data handling, sensor data collection, storage
- 19 of sensor data in said first sensing unit, and transmission of data
- 20 from said sensing unit;
- 21 d) triggering transmitting data from said first sensing unit to said
- 22 second receiving device.

1 40. (currently amended) A data collection apparatus, comprising a network of
2 addressable sensing units and a separate control unit, wherein each addressable
3 sensing unit of said network of addressable sensing units has an individual
4 address, wherein said control unit includes a communications device for
5 transmitting address information to communicate with an individual addressable
6 sensing unit based on said individual address, ~~wherein said sensing units are for~~
7 ~~sensing a parameter~~, wherein said sensing units each comprise a sensor, a
8 microprocessor, a first data storage device connected to said microprocessor, a
9 first transmitting device and a first receiving device, wherein said sensing units
10 are configured so a real time signal from said control unit to at least one said
11 sensing unit triggers a change in at least one from the group consisting of: (a) data
12 handling, (b) data collection, and (c) data storage in said sensing unit, and (d)
13 sensor data transmission from said sensing unit to said control unit, wherein all
14 power for powering said sensing units is derived from said control unit.

1 41. (Currently amended) The apparatus as recited in claim 40, ~~wherein said control~~
2 ~~unit is separable from said sensing units~~, further wherein said control unit
3 comprises a second transmitter, a second receiver, and a second data storage
4 device for storing data received from said sensing units.

1 42. (previously presented) The apparatus as recited in claim 41, wherein said second
2 transmitter is connected to transmit address information to activate at least one
3 from the group consisting of all of said sensing units, specific ones of said sensing
4 units, and one of said sensing units.

1 43. (Previously presented) The apparatus as recited in claim 41, wherein said control
2 unit is configured to provide an address to query each sensing unit individually.

- 1 44. (Currently amended) The apparatus as recited in claim 41, wherein said second
2 transmitting device ~~is for transmitting~~ transmits a timing signal for synchronizing
3 said plurality of sensing units.
- 1 45. (Previously presented) The apparatus as recited in claim 40, wherein said
2 microprocessor is programmed to do at least one from the group consisting of: (a)
3 query, (b) activate, and (c) send timing information to each sensing unit
4 individually, and (d) activate all sensing units at once.
- 1 46. (Currently amended) The apparatus as recited in claim 40, wherein said sensing
2 units further comprise a signal conditioner, an analog to digital (A/D) converter,
3 and a clock for microprocessor functions and to track time.
- 1 47. (previously presented) The apparatus as recited in claim 40, wherein said first data
2 storage device is connected to said first transmitting device for transmitting data
3 to said control unit when a real time signal triggering transmission is received.
- 1 48. (Previously presented) The apparatus as recited in claim 40, wherein said first
2 transmitter and said second transmitter are wireless transmitters.
- 1 49. (Currently amended) The apparatus as recited in claim 40, wherein each said
2 sensing unit further comprises a triggering device ~~for providing said triggering~~.

1 50. (Currently amended) A data collection apparatus, comprising:

2 a plurality of sensing units for sensing a parameter, said sensing units each
3 comprising a sensor, a first data storage device, a first transmitting device
4 and a first receiving device;

5
6 a control unit ~~separable~~ separate from said sensing units, said control unit
7 comprising a second transmitting device, a second receiving device, and a
8 second data storage device, said second data storage device for storing data
9 received from said sensing units, wherein each of said sensing units is
10 configured so a real time signal from said control unit to said sensing unit
11 is configured to trigger transmitting data derived from said sensor by said
12 first transmitting device to said second receiving device; and

13 wherein each sensing unit of said plurality of sensing units has ~~an~~
14 ~~individual~~ unique address, and wherein said control unit includes a
15 communications device for transmitting address information to
16 communicate with an individual sensing unit based on said ~~individual~~
17 unique address, wherein all power for powering said individual sensing
18 unit is derived from said control unit.

1 51. (Currently amended) The apparatus as recited in claim 50, wherein said second
2 transmitting device is further ~~for transmitting~~ transmits timing information to said
3 sensing units.

1 52. (Currently amended) The apparatus as recited in claim 50, wherein said address
2 information ~~is to activate~~ activates at least one from the group consisting of all of
3 said sensing units, specific ones of said sensing units, and one of said sensing
4 units.

- 1 53. (Previously presented) The apparatus as recited in claim 50, wherein said control
2 unit is configured to provide an address to query each sensing unit individually.
- 1 54. (Previously presented) The apparatus as recited in claim 50, wherein said sensing
2 units each further comprise a plurality of sensors wherein said microprocessor is
3 programmed to do at least one from the group consisting of (a) query each of said
4 sensing units individually (b) activate each of said sensing units individually (c)
5 query all said sensing units at once and (d) activate all said sensing units at once.
- 1 55. (Cancel)
- 1 56. (previously presented) The apparatus as recited in claim 50, wherein said sensing
2 units each further comprise a signal conditioner and an A/D converter.
- 1 57. (previously presented) The apparatus as recited in claim 50, wherein said
2 microprocessor controls storage to said first data storage device.
- 1 58. (Previously presented) The apparatus as recited in claim 50, wherein said first
2 transmitting device is configured to transmit data from said first storage device to
3 said control unit.
- 1 59. (previously presented) The apparatus as recited in claim 50, wherein said second
2 receiving device and second data storage device are for receiving and storing said
3 data transmitted to said control unit.
- 1 60. (previously presented) The apparatus as recited in claim 50, wherein said first
2 transmitting device and said second transmitting device are wireless transmitters.

- 1 61. (Currently amended) The apparatus as recited in claim 50, further comprising a
2 triggering device ~~for providing said triggering.~~
- 1 62. (Previously presented) The apparatus as recited in claim 50, wherein each said
2 sensing unit is configured so data from said sensor triggers transmission from said
3 sensing unit to said control unit.
- 1 63. (previously presented) The apparatus as recited in claim 62, wherein each said
2 sensing unit is configured to trigger transmission from said sensing unit to said
3 control unit once sensor data exceeds a threshold value.
- 1 64. (Previously presented) The apparatus as recited in claim 1, further comprising a
2 host computer, wherein said control unit is connected to said host computer.
- 1 65. (Previously presented) The apparatus as recited in claim 64, wherein said host
2 computer is configured to accept user input, wherein a user operating on said host
3 computer sends a signal for triggering data collection.
- 1 66. (Currently amended) The apparatus as recited in claim 65, further comprising a
2 triggering device ~~for providing said triggering.~~
- 1 67. (Previously presented) The apparatus as recited in claim 1, wherein said sensing
2 unit is configured so data from said sensor triggers transmission from said sensing
3 unit to said control unit.
- 1 68. (Previously presented) The apparatus as recited in claim 67, wherein said sensing
2 unit is configured to trigger transmission from said sensing unit to said control
3 unit once sensor data exceeds a threshold value.

- 1 69. (Previously presented) The apparatus as recited in claim 2, wherein said sensor
2 comprises an angular accelerometer.
- 1 70. (Previously presented) The apparatus as recited in claim 2, wherein said sensor
2 comprises a piezoelectric accelerometer.
- 1 71. (Currently amended) The apparatus as recited in claim 13, wherein said
2 microprocessor comprises a triggering device ~~for initiating~~ that initiates
3 transmission of data from said sensing unit to said control unit, wherein said
4 triggering device is controlled by a real time change in said data.
- 1 72. (Previously presented) The apparatus as recited in claim 23, wherein said timing
2 signal synchronizes clocks on said sensing unit and on another apparatus.
- 1 73. (Previously presented) The method as recited in claim 39, wherein said triggering
2 transmitting data includes generating a trigger signal within said sensing unit.
- 1 74. Cancel
- 1 75. (Currently amended) The apparatus as recited in claim 40, wherein each said
2 sensing unit is configured so data from said sensor ~~can trigger~~
3 triggers transmission from said sensing unit to said control unit.
- 1 76. (previously presented) The apparatus as recited in claim 75, wherein each said
2 sensing unit is configured to trigger transmission from said sensing unit to said
3 control unit once sensor data exceeds a threshold value.
- 1 77. (Previously presented) The apparatus as recited in claim 1, wherein said first data
2 storage device is controlled by data received by said sensor.

- 1 78. (Previously presented) The apparatus as recited in claim 1, wherein said sensing
2 unit is configured to be triggered by at least one from the group consisting of a
3 real time change in information that exceeds a predetermined threshold, a change
4 in information about a structure or subject being monitored, detection of inactivity
5 for a period of time exceeding a predetermined time, receiving a signal from an
6 analyst, an event sensed by said sensor, and receiving a real time signal from said
7 control unit to said sensing unit.
- 1 79. (previously presented) The apparatus as recited in claim 1, wherein said control
2 unit comprises a first part and a second part, wherein said first part includes said
3 second receiving device, said second transmitting device, and said second data
4 storage device, wherein said second part includes a power amplifier, a signal
5 generator and a transmitter coil, wherein said second part is separate from said
6 first part, wherein all power for powering said sensing unit is derived from said
7 second part.
- 1 80. Cancel
- 2
- 3 81. Cancel

1 82. (Currently amended) A method of collecting data, comprising:
2
3 a) providing a sensing unit for sensing a parameter, said sensing unit
4 comprising a sensor, a first data storage device, a first receiving
5 device, and a first transmitting device, said first data storage device
6 for storing data from said sensor, said first transmitting device for
7 transmitting data derived from said sensor;
8
9 b) providing a control unit ~~separable~~ separate from said sensing unit,
10 said control unit comprising a second receiving device, a second
11 transmitting device, and a second data storage device different
12 from said first storage device, said second receiving device for
13 receiving data transmitted from said sensing unit, said second data
14 storage device for storing said data received from said sensing unit,
15 wherein all power for powering said sensing unit is derived from
16 said control unit; and
17
18 c) transmitting a real time signal from said control unit to said first
19 receiving device to trigger a change in at least one from the group
20 consisting of sensor data handling, sensor data collection, sensor
21 data storage in said first sensing unit, and data transmission from
22 said sensing unit.

1 83. (Currently amended) A method as recited in claim 82, wherein said sensing unit ~~is~~
2 ~~for sensing~~ senses a parameter of a subject, wherein said subject includes at least
3 one from the group consisting of an architectural structure and a vehicle.

1 84. Cancel